

# TECHNICAL MEMORANDUM

Utah Coal Regulatory Program


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March 12, 2007

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TO: Internal File

THRU: Pamela Grubaugh-Littig, Permit Supervisor

FROM:  Steve Christensen, Environmental Scientist II

RE: Permit Area Expansion – Addition of 40 Acres, Canyon Fuel Company, LLC,  
Dugout Mine, C/007/00039, Task ID #2762

## **SUMMARY:**

On January 30<sup>th</sup>, 2007 the Division of Oil, Gas and Mining (the Division) received an application from Canyon Fuel Company, LLC (the Permittee) to increase the Dugout Canyon Mine's permit area by an additional 40 acres. No additional surface disturbance is associated with the proposed permit expansion. The following memo addresses the technical adequacy of the application relative to the hydrology regulations State of Utah R-645 Coal Mining Rules.

The application has met the hydrology regulations as provided in the State of Utah R-645 Coal Mining Rules and should be approved.

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**TECHNICAL ANALYSIS:**

**ENVIRONMENTAL RESOURCE INFORMATION**

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

**GENERAL**

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

**Analysis:**

The application meets the Environmental Resource Information requirements for General information as required in R645-301-721. On pages 7-2 thru 7-4 of the approved MRP, the Permittee provides references to the sections of the plan that describe the existing, pre-mining hydrologic resources within and adjacent to the permit area, including the proposed 40 acre expansion.

**Findings:**

The information provided meets the hydrology requirements for General Environmental Resource Information as provided in the R645-State of Utah Coal Mining Rules.

**HYDROLOGIC RESOURCE INFORMATION**

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

**Analysis:**

**Sampling and Analysis**

The application meets the Hydrologic Resource Information Requirements for Sampling and Analysis as provided in R645-301-723. On page 7-4 of the approved MRP, the Permittee states, "All water samples collected for use in this MRP have been analyzed according to methods in either the 'Standard Methods for the Examination of Water and Wastewater' or 40 CFR Parts 136 and 434."

**Baseline Information**

The application meets the Hydrologic Resource Information Requirements for Baseline Information as provided in R645-301-724. Baseline information is provided in the MRP beginning on page 7-4 and continuing through page 7-39. Plate 7-1, Hydrologic Monitoring Stations, depicts the spring, monitoring well, mine discharge and stream monitoring sites within and adjacent to the proposed expansion. Plate 7-2, Water Rights, depicts the State Appropriated Water Rights within the existing permit area as well as in the proposed expansion area.

Ground water systems are discussed within the MRP in the aforementioned location as well as in Appendix 7-3. Ground water data is presented in Appendix 7-2. Plate 7-1 depicts 13 springs within approximately ½ mile of the proposed expansion area that were analyzed for the existing permit area. Plate 7-2, Water Rights, depicts a water right within the proposed IBC area. The water right, #91-3033, is held by the Thayn family and is designated as a point-to-point stock watering point. Upon examining Plates 7-1 and 7-2, the Thayn water right is the only spring located within the proposed lease expansion. Currently, water monitoring is conducted at three springs located in close proximity to the proposed expansion area: SC-65, 259 and 260. A minimum of 6 years of data has been collected for each of the three sites and they continue to be monitored. Springs SC-65 and 260 discharge from the Colton geologic formation. Spring 259 discharges from the North Horn formation. The geologic systems of the North Horn and Colton formations are discussed in Chapter 7 of the MRP as well as in Appendix 7-3.

Surface water features within the existing permit area as well as in the proposed expansion area are depicted on Plates 7-1 and 7-2. No surface water systems are depicted within the proposed expansion area. The watershed of the proposed expansion area is part of a system located within the existing permit area. The watershed of the proposed expansion area is part of a tributary system that flows to Pace Creek Canyon. Baseflow within this drainage appears to originate from springs discharging from the Castlegate Sandstone, Price River, Flagstaff/North Horn and Colton geologic formations. As mentioned above, the Permittee has established spring monitoring points within the Colton and North Horn formations adjacent to the proposed expansion area.

### **State Appropriated Water Rights**

The application meets the hydrology requirements for Environmental Description of State Appropriated Water Rights as provided in R645-301-724.100 and -724.200. Plate 7-2, Water Rights, depicts the State Appropriated Water Rights within the existing permit area as well as in the proposed lease expansion. One water right is located within the proposed expansion area: water right #91-3033. The water right holder is listed as George M. Thayn. The Thayn's are also the surface landowners of the proposed expansion area. The water right's place of use is listed as the NW1/4NW1/4 of Section 21, T13S, R13E. Its use is for stock watering directly on a spring. The Thayn's have three other water rights within the area adjacent to the proposed expansion: #90-1013, #91-1732 and #91-4970.

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**Baseline Cumulative Impact Area Information**

The application meets the hydrology requirements for Baseline Cumulative Impact Area Information as provided in R645-301-725. The Permittee has provided the requisite geologic and hydrologic data to the Division in order to produce the Cumulative Hydrologic Impact Assessment (CHIA).

**Modeling**

The application meets the hydrology requirements for Modeling as provided in R645-301-724.100 and -724.200. No ground or surface water modeling was conducted in support of either the approved MRP or the proposed expansion area. The Permittee has provided actual baseline data from field measurements in order to evaluate the hydrologic system in the permit area and proposed expansion.

**Probable Hydrologic Consequences Determination**

The application meets the hydrology requirements for Probable Hydrologic Consequences Determination (PHC) as provided in R645-301-728. Discussions of the probable hydrologic consequences are discussed beginning on page 7-40 of the MRP and in Appendix 7-3. The PHC is based on the baseline data presented and summarized in Sections 724.100 and 724.200 in the MRP.

**Findings:**

The information provided meets the hydrology requirements for Hydrologic Resource Information as provided in the R645-State of Utah Coal Mining Rules.

**MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

**Analysis:**

**Monitoring and Sampling Location Maps**

The application meets the hydrology requirements for Monitoring and Sampling Location Maps as provided in R645-301-722. Plate 7-1, Hydrologic Monitoring Stations, depicts sampling locations for springs, mine discharge, monitoring wells and stream gauging stations. The map has been updated to depict the proposed expansion area.

### **Subsurface Water Resource Maps**

The application meets the hydrology requirements for Subsurface Water Resource Maps as provided in R645-301-722. Plate 7-3, Castlegate Potentiometric Surface, depicts the potentiometric surface of the Castlegate Sandstone within the permit area. Plate 7-2, Water Rights, depicts the water rights within the permit area as well as in the proposed expansion area.

### **Surface Water Resource Maps**

The application meets the hydrology requirements for Surface Water Resource Maps as provided in R645-301-722. Plate 7-2, Hydrologic Monitoring Stations, depicts the surface water resources within the permit area, the proposed expansion area as well as in adjacent areas.

### **Findings:**

The information provided meets the hydrology requirements for Maps, Plans and Cross Sections of Resource Information as provided in the R645-State of Utah Coal Mining Rules.

## **OPERATION PLAN**

### **HYDROLOGIC INFORMATION**

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

### **Analysis:**

#### **General**

The application meets the hydrology requirements for General Hydrologic Information as provided in R645-301-731. The approved MRP discusses the local hydrologic conditions in the area of the proposed expansion area. In addition, the MRP outlines measures to be taken to avoid acid or toxic drainage, prevent additional contributions of suspended solids to streamflow, provide water treatment facilities when needed and control drainage on pages 7-51 and 7-52 of the MRP.

#### **Groundwater Monitoring**

The application meets the hydrology requirements for Groundwater Monitoring as provided in R645-301-731.210. Beginning on page 7-52 of the MRP, the Permittee describes the

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ground water monitoring program to be initiated during the operational phase of mining. The ground water monitoring program is based upon the PHC determination in the MRP. The springs to be monitored are listed on page 7-53. The purpose of monitoring the springs is to assess potential impacts to ground water systems overlying the Blackhawk Formation due to subsidence and mine dewatering. Table 7-4, Groundwater Monitoring Program, on pages 7-55 and 7-56 provides an overview of the sites to be monitored, their sampling protocol and analytical parameters.

In the previous analysis, a deficiency was identified relative to State Appropriated Water Rights. Plate 7-2, Water Rights, depicts a water right within the proposed expansion area. The water right is #91-3033. The water right is utilized for stock watering by the Thayn family. The Permittee was asked to establish a monitoring point on that water right. The monitoring would be performed in order to assess potential impacts to that water resource due to subsidence and mine dewatering. The Permittee has added water right #91-3033 to the ground water monitoring program. On page 7-58, the Permittee has added a spring water monitoring point to the list of springs included in the operational and post-mining ground water monitoring program. The site is identified as '259A'. The site is also listed on page 7-60 within Table 7-4, Groundwater Monitoring Program. Upon inspection of Plate 7-1, Hydrologic Monitoring Stations, site 259A is located where water right #91-3033 as depicted on Plate 7-2, Water Rights.

### **Surface Water Monitoring**

The application meets the hydrology requirements for Surface Water Monitoring as provided in R645-301-731.220. The Permittee discusses the specifics of the surface water monitoring program beginning on page 7-57 and continuing through page 7-62 of the MRP. Table 7-5, Surface Water Monitoring Program, on page 7-60 and 7-61 provides an overview of the sites to be monitored, their sampling protocol and analytical parameters. No surface water features have been identified within the proposed expansion area.

### **Replacement of State Appropriated Water**

The application meets the Hydrologic Information Requirements for Replacement of State Appropriated Water as provided in R645-301-731.530. On pages 7-50 and 7-51 of the MRP, the Permittee outlines the process for the replacement of State Appropriated Water. The Permittee states, "The Permittee will replace the water supply of any land owner if such a water supply proves to be contaminated, diminished or interrupted as a result of the mining operations". The replacement of water would be predicated upon the Division making a finding that material damage had occurred.

### **Acid- and Toxic-Forming Materials and Underground Development Waste**

The application meets the Hydrologic Information Requirements for Acid-and Toxic-Forming Materials and Underground Development Waste as provided in R645-301-731.300. Analyses presented in Chapter 6 of the MRP indicate that acid- and toxic-forming materials are not present within the permit area. The Permittee commits to periodically monitor parameters defining acid- and toxic-forming materials. In the event that acid- or toxic-forming materials are identified, they will be disposed of in appropriate waste-rock disposal facilities as described in Chapter 5 of the MRP.

**Findings:**

The information provided meets the Operational Plan hydrology requirements for Hydrologic Information as provided in the R645-State of Utah Coal Mining Rules.

## **MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

**Analysis:**

### **Monitoring and Sampling Location Maps**

The application meets the Maps, Plans, and Cross Sections of Mining Operations for Monitoring and Sampling Location Maps as provided in R645-301-731. Plate 7-1, Hydrologic Monitoring Stations, depicts the sampling locations for monitoring wells, springs, stream stations and mine discharge.

**Findings:**

The information provided meets the Operational Plan hydrology requirements for Maps, Plan and Cross Sections of Mining Operations as provided in the R645-State of Utah Coal Mining Rules.

## **RECLAMATION PLAN**

### **GENERAL REQUIREMENTS**

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-

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626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

**Analysis:**

The application meets the Reclamation Plan regulations for General Requirements as provided in R645-301-760. No additional surface disturbance is associated with the proposed permit expansion.

**Findings:**

The information provided meets the Reclamation Plan General hydrology requirements as provided in the R645-State of Utah Coal Mining Rules.

**HYDROLOGIC INFORMATION**

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

**Analysis:**

**Hydrologic Reclamation Plan**

**Findings:**

The information provided meets the hydrology requirements for Cumulative Hydrologic Impact Assessment as provided in the R645-State of Utah Coal Mining Rules.

**CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT**

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

**Analysis:**

The application meets Cumulative Hydrologic Impact Assessment requirements as provided in R645-301-730. Due to the small size (40 acres) of the proposed expansion, significant changes to the cumulative hydrologic impact due to mining are not anticipated.

**Findings:**



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The information provided meets the hydrology requirements for Cumulative Hydrologic Impact Assessment as provided in the R645-State of Utah Coal Mining Rules.

**RECOMMENDATIONS:**

The application should be approved at this time.

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